# STATE OF COLORADO

COLORADO DEPARTMENT OF HEALTH
*Dedicated to protecting and improving the health and environment of the people of Colorado*

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August 6, 1993

Mr. Martin Hestmark
Rocky Flats Project Manager, 8HWM-RI
U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 500, 8WM-C
Denver, Colorado 80202-2405

**RE: Standard Operating Procedures:**
**Surface Soil Sampling, GT.8, Rev.3, 6/20/93**
**Tank and Pipeline Investigation, Rev:0, Draft, 6/20/93**

Dear Mr. Hestmark,

The Colorado Department of Health, Hazardous Materials and Waste Management Division (the Division), has reviewed the above reference documents and is providing the following comments.

The Division feels that since most of the comments stem from impreci language in the SOPs themselves, inclusion of the information requested in the comments or clarification of the wording should be sufficient for approval. For that reason, the Division recommends conditional approval of the above SOPs, provided these comments are addressed in the final documents.

If you have any questions regarding these matters, please call Dave Norbury of my staff at 692-3415.

Sincerely,

Gary W. Baughman, Chief
Facilities Section
Hazardous Waste Control Program

cc: Rich Schassburger, DOE
[redacted] DOE
Marla Broussard, EG&G
Jackie Berardini, CDH-OE
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Colorado Department of Health
Comments on the Surficial Soils Sampling SOP GT.8 - Rev 3

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**GENERAL COMMENTS**

1. Training - there is no mention of the minimum requirements for sampling personnel (see section 3.0).
2. Personnel Protective Equipment - sampling personnel will be handling potentially hazardous materials. They should have some minimum protective clothing. This can be included in section 3.0. If this is covered under the Health and Safety Plan, it should be briefly mentioned (see related comment in section 4.2.4).
3. Intrusiveness - Several methods described in this SOP are below surface and require excavation of ground cover. Surficial soil sampling is meant to be non-intrusive. Perhaps the SOP should be renamed to delete the word "surface" and just be called "soil sampling" (see related comments in sections 1.0 and 5.2.4).

**DOCUMENT-SPECIFIC COMMENTS**

1.0 Purpose
Define the term "near-surface". Even though this is adequately quantified in the text, this is a good place to distinguish what is encompassed in this SOP.

3.0 Prerequisite
Define the "appropriate" amount of "applicable" field experience. Reading the OU-specific FSP is obvious. How can we ensure that the field personnel are adequately trained in sampling methodology? What are the requirements of the "qualified person" who will be supervising? The Division does not feel that having read this SOP and other applicable SOPs is enough to train the sampling personnel on the proper procedures for sampling - protocol, methods, equipment, handling, and management.

4.0 Methods for Surface Radionuclide Sampling
"If the objective of sampling is other than those described above, special collection techniques could be required. When this occurs, the project manager should seek expert advice...". Who is to provide this "expert advice" and how do we ensure such advice does not invoke a deviation from the FSP?

4.1.3 Sampling Plot Layout - CDH Method
The FSPs specify what grid spacing to use. This section discusses subsample layout in plots where grid spacing is undefined. Is this really applicable?

4.1.4 Procedures - CDH Method
1. Specify the type of sample container to use.
2. Specify the information to be included on the label.
4. Specify what is considered as "undesirable" top layer. This statement occurs throughout the SOP.

11. Specify the paperwork that must be transferred with the sample (chain-of-custody, etc).

4.2 Soil Sampling with the RF Method
Clarify the numerical description of the jig area. "The jig outlines a 10-cm square area..." can be interpreted as a 10 $cm^2$ area or a square with 10-cm sides (100 $cm^2$).

4.2.3 Sampling Plot Layout - RF Method
"The sample collection crew should be accompanied by supervision...". Shouldn't this be true of all sampling activities?

4.2.3 Sampling Plot Layout - RF Method
"If a sample site is not available that meets the criteria described in the FSP, the independent judgement of the crew supervisor should be used to meet the basic objectives as closely as possible." Is there a mechanism that allows for agency approval if there is a required deviation from the approved FSP?

4.2.4 Procedures - RF Method

5. "If the soil is moist, gently crush soil aggregate with fingers...". Sampling personnel should be required to wear gloves, to protect not only themselves but the samples too.

4.3 Soil Sampling With the Grab Method
This section is far too vague. Section 4.5 (Surface Soil Sampling Below Asphalt or Concrete) and specifically section 4.5.4 (Sampling Procedure - Grab Method) gives the appropriate detail. Nothing beneficial is said here - either include a reference to the above sections or delete this section altogether.

4.4.7 Procedure for Sampling Under Asphalt and Concrete - Vertical Profile

5. Correct reference to previous sections should be 4.4.4, 4.4.5, and 4.4.6. Better yet, this should be rolled into section 4.5, which could then describe all types of soil sampling below asphalt or concrete (grab, vertical profiles, etc).

4.5.4 Sampling Procedure - Grab Method Below Asphalt or Concrete

7. "If the nature of the asphalt allows, the use of a pick will be substituted for the concrete core drill...". Who makes this determination? A pick would seem to have greater potential to disturb the soils that are to be sampled.

4.6.5 Procedures for Sampling Core - Top and Bottom One-Fifth

4. & 5. Nothing is said on how the top and bottom portions of the cut are to be managed. Are they supposed to be mixed together or handled separately?

7. This statement makes no sense.

5.2.4 Procedures - Sampling with a Hand Auger

3. Borehole depths of up to 38 inches are described. Are these truly "surficial soils"? (See related comment #3 in the "general comments" section).

5.4.2 Equipment and Materials - Wipe and Pavement Sampling for PCBs

- solvent (such as isooctane)... The "such as" wording allows too much ambiguity. Specify the exact solvent(s) that are to be used.

Colorado Department of Health
Comments on the Tank and Pipeline Investigation SOP - Rev 0

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**GENERAL COMMENTS**

The document is poorly written and has many grammatical, typographical, and spelling errors.

SOP language must be concise, measurable, implementable, and require no interpretation. It is a "how-to" for people with no prior experience. Too many instances of vague language exist.

**DOCUMENT SPECIFIC COMMENTS**

Table of Contents
Section 6.2.3 presents procedures for video inspection of pipelines. Previous documentation for this has been submitted in the form of SOP SW.01. Is the intent to incorporate SOP SW.01 into this SOP? If not, and if SOP SW.01 is to remain a stand-alone document, then section 6.2.3 is duplicative and need only reference the other SOP.

2.0 Scope
The wording should be more specific to address which tanks and pipelines are potentially affected by this SOP. If any and all tanks/pipelines at RFP are subject, then it should say so; likewise, if only a subset is included (permitted, interim status, abandoned), this too needs to be specified.

3.0 Prerequisite
The first paragraph is good in that it stipulates what training is required. A somewhat more detailed breakdown of the 24 hours of "on-the-job" training would be helpful.

The second paragraph, by contrast, is too vague. The "appropriate" amount of "applicable" experience does not define the required training. There is a significant difference in formal schooling between engineers and field technicians.

Change the first sentence of the third paragraph to read: *"Prior to investigation,* the field team and field supervisor shall:"

4.0 Records Search
This section describes non-field activities associated with RFI/RI investigations. The stated purpose of the SOP is to **inspect** and **sample** tanks and pipelines. The data compilation paperwork is a precursor needed to direct the field work; the Division questions the need for administrative activities in the SOP.

5.1 Visual Inspections

1. Modify the last sentence of this paragraph to read: "Radiation surveys will be conducted in accordance to SOP FO.16, Field Radiological Measurements, before any inspections *and/or sampling activities* are conducted."

Many tanks will be rad hot and must be screened first in all cases.

5.2.1 Residue Sampling

Residue samples can characterize past contents but cannot infer past usage.

2. The FSPs do not provide the detail on sampling methodologies - they will typically say "take a sample" and leave it at that. While this SOP does give procedures for COLIWASA and liquid grab sampling, other methodologies mentioned in this paragraph are not (particularly wipe samples in the event of no liquid inventory). It is anticipated that wipe sampling will be used extensively for tank and pipeline source characterization, and the procedure must be included in this SOP (or adequately referenced if it exists somewhere else).

5.2.2 Sampling Tank Product Using the COLIWASA

The second paragraph "advises" elimination of the use of PVC in favor of glass or Teflon. Again, as a operating procedure, the language must specify, not advise.

Several comments pertinent to the operation of a COLIWASA follow:

- Most COLIWASAs have a practical limitation on their use, and require a minimum liquid level in the tank to be useful (at least six inches of liquid for a 1 3/4" sampler). This needs to be qualified.

- Inclusion of a Figure depicting a typical COLIWASA showing the major components would be helpful.

5. Specify that the sampler must be inserted normal to the surface of the liquid. In the event of a opaque tube (teflon), comparing liquid levels outside and inside the tube may not be possible. Include a timing insertion guideline (no more than 8" per second is typical).

6. It is also possible to pull the stopper rod up to close the sampler.

7. The sampler must be withdrawn **briskly,** not slowly. COLIWASAs leak, and too slow a removal rate will jeopardize the sample. The sampler must be withdrawn normal to the surface of the liquid.

8. Stabilize the container when transferring the sample volume. Knocking over the jar is a common problem.

5.2.3 Sampling Tank Product with a Kemmerer Bottle

2. This sentence describes marking a line at the desired sampling depth. How is this done when the sampling event occurs below the liquid level?

12. "Label the sample bottle with an appropriate tag." Section 9.0, Documentation, does not delineate what is supposed to be on a sample label; therefore, it needs to be spelled out here.

5.2.4 Radiological

- From a Health and Safety perspective, this activity should occur first, before any inspection or sampling. For that reason, this section should be moved forward in the document.

- Form A has no entry for the input of radiological data.

- The procedure for radiological wipe samples is not defined. A reference to SOP FO.16 is given; it is not clear whether this is sufficient, or whether this sampling technique needs to be in this SOP.

6.1.2 Ground Penetrating Radar

The third paragraph discusses resolution as a function of subsurface features, including soil conductivity. How is the performance affected by pavement? Most of the OPWL is in the industrial area and potentially underneath pavement.

6.2.1 Test Pits

A comment on how the locations of the test pits are determined would be helpful.

6.2.3 Video Inspection

SOP SW.01, "Video Inspection of Pipelines", Rev 0, March 1993, has been previously submitted. See comments under the Table of Contents section.

6.3 Residue Sampling

The fourth paragraph mentions wipe sampling and references SOP FO.16. Does that SOP include instructions on wipe sampling for non-radioactive samples? Again, this is a vital part of tank and pipeline investigations and should be included somewhere in this SOP.

6.4.1.2 Procedure - Pressurization

"Any pressure drop of less than 5 psi is inclusive." Should this say "inconclusive"?

Form A - Tank System Inspection Form

A.2. Materials...of what? Presumably of construction. Specify.
A.4. Containment...makes no mention of inspecting the condition of the containment.
A.5. Ancillary Equipment...what about it? What is the inspector looking for?

B. Regulatory Compliance...many of the items in part B have no bearing on regulatory compliance. There is probably no need to subsection the form as such.
B.1. Integrity...the "Characteristics of Waste" subsection has nothing to do with integrity.
B.4. Ancillary Equipment...how does this differ from A.5?

- Include a section for the results of radiological surveys.
- Include a section for regulatory status of the tank - permitted, interim status, etc.
- Include a section for information on any samples taken.

Form B - Pipeline Inspection Form

- Include sections for describing remaining inventory and/or samples taken.

Form C - Sample Data Collection Form

- The "sample location" section needs to specify the tank or pipeline segment from which the sample was taken. This information needs to be coordinated among all three forms.